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SECOND WORK PLAN SUPPLEMENT
WAUKEGAN REMEDIAL SITE
MANVILLE SALES CORPORATION

Prepared for:

Manville Sales Corporation

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CONESTOGA-ROVERS & ASSOCIATES

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1.0 INTRODUCTION

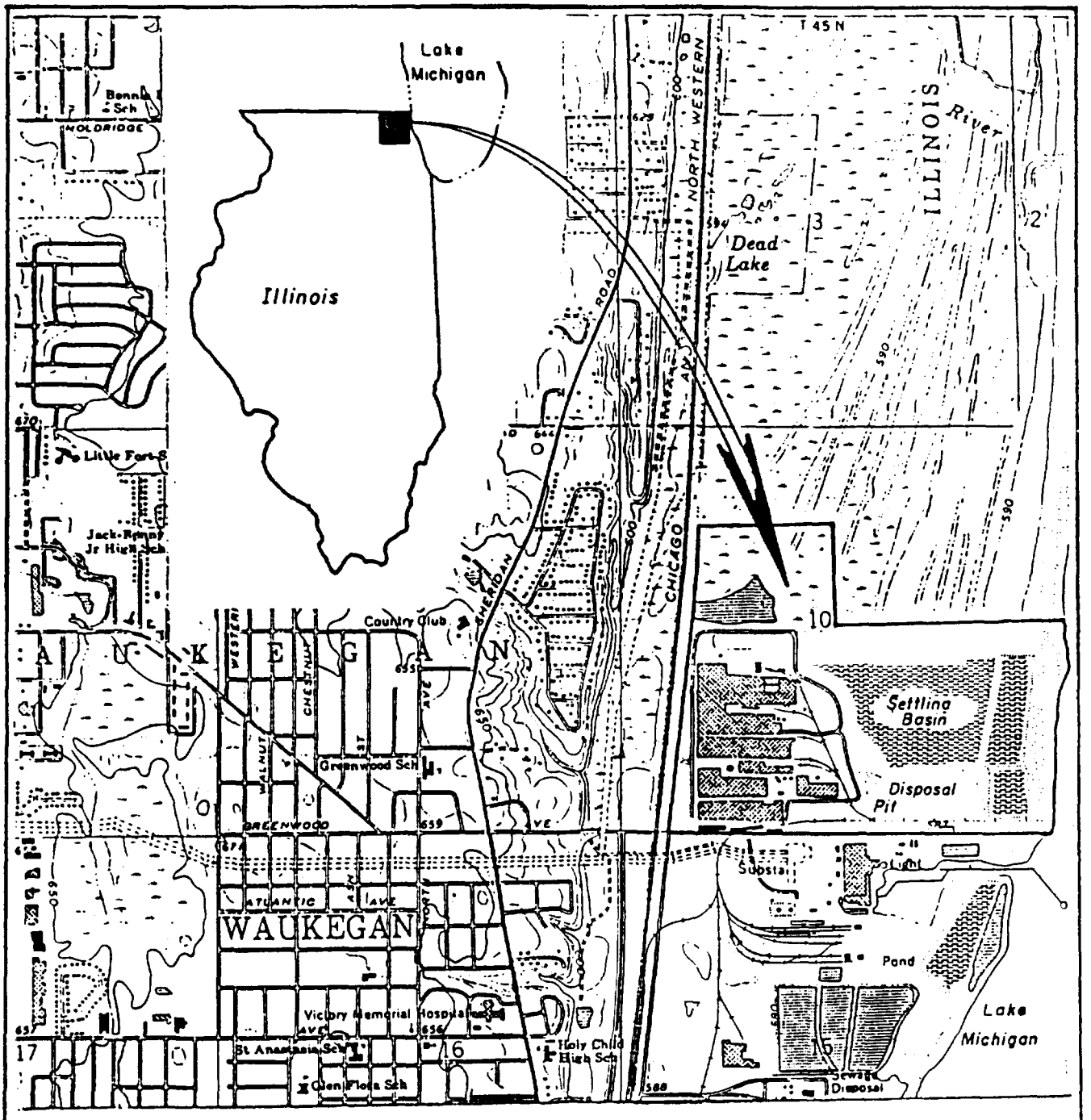
The Second Work Plan Supplement presented hereafter was developed to address the remediation of several areas on Site not addressed in the Amended Work Plan or first Work Plan Supplement, (dated April 28, 1989), prepared by Conestoga-Rovers & Associates (CRA), which were confirmed to contain Asbestos Containing Materials (ACM).

The work to be performed under this Second Work Plan Supplement consists of the remediation of areas at the Site not specifically covered under the Amended Work Plan, or first Work Plan Supplement. This work consists of the following activities:

i) placement of a 24-inch thick vegetated soil cover on the East Border Area, easternmost road, and Seepage Basin/Ditch;

ii) extension of several on-Site monitoring well casings, covers and protective posts east of the disposal area to facilitate access after placement of the soil cover;

iii) placement of precast concrete blocks at both the northern and southern most ends of the former East Road;



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1"=2000'

figure 1.1

SITE LOCATION MAP
MANVILLE DISPOSAL AREA
Waukegan, Illinois

Map adapted from USGS Zion Quad. Map

CRA

iv) placement of 6-foot wide riprap slope erosion protection along the banks of the Pumping Lagoon and south and west banks of the Industrial Canal at the soil/water interface;

v) placement of a 24-inch thick vegetated soil cover on the south and west banks of the Industrial Canal to meet adjacent soil cover and/or gravel roadways, and extension of existing drain lines;

vi) placement of a 24-inch thick vegetated soil cover on the north, south, east and west banks of the Pumping Lagoon;

vii) placement of a 24-inch thick vegetated soil cover on the Pumping Lagoon-North Area;

viii) placement of a 20-foot wide Class I gravel road along the north and east perimeter of the Pumping Lagoon;

ix) placement of 6-foot wide riprap slope erosion protection along the south bank of the Borrow Pit, adjacent to the new soil cover on the Pumping Lagoon-North Area;

x) backfill of existing water leveling ditches between the Industrial Canal and the Borrow Pit with sand and placement of a 24-inch thick vegetated soil cover;

xi) abandonment of existing AC pipe culverts at the northwest corner of the Industrial Canal, at the west bank of the Industrial Canal,

and at the connection of the water leveling ditches between the borrow pit and the Industrial Canal, and installation of 36-inch diameter concrete pipe culverts between the borrow pit and the Industrial Canal and between the Industrial Canal and the pumping lagoon;

xii) placement of a 24-inch thick composite sand/gravel cover on the area west of the South Central Area-West;

xiii) placement and grading of a surface gravel cover on the Semi-Trailer Staging area and construction of new concrete trailer dolly support pads; and

xiv) implementation of a Site Health and Safety Plan, dated June 1988, revised October 1988, prepared by CCJM.

This Second Work Plan Supplement describes work to be done pursuant to the Consent Decree in addition to the work described in the Consent Decree and its attachments (as revised) and in the original Work Plan and the April 28, 1989 first Work Plan Supplement. All applicable provisions of these prior documents remain in force and the work to be done under this Second Work Plan Supplement shall be consistent therewith.

2.0 SCOPE OF WORK

2.1 CLEARING AND GRUBBING

Areas to be remediated under this Work Plan will be cleared of trees, bushes, brush and other debris which may affect placement of the soil cover. All clearing and grubbing activities will be performed in accordance with Section 02102.3.01 of Attachment B, Specifications, dated June 1988, revised October 1988 and prepared by CCJM. All tree cuttings and brush generated by clearing and grubbing will be disposed of in the Active Miscellaneous Waste Disposal Area.

2.2 SURFACE CLEANUP

Areas of the Manville Waukegan property not addressed under the original remedial construction or this Second Work Plan Supplement shall be visually inspected for surficial potential ACM. All surficial potential ACM so identified shall be initially thoroughly wetted with amended water, and then picked up and placed into double 6-ml polyethylene bags designed for asbestos containment. The bags will be voided of air spaces prior to sealing with duct tape. The bags of ACM generated from this activity will be transported to one or more on-Site areas requiring remedial soil cover under this Second Work Plan Supplement as designated by Manville's OSR and approved by USEPA's OSC and placed on the existing ground surface prior to construction of the specified soil cover.

Following completion of the surface cleanup, Manville's OSR and USEPA's OSC shall visually inspect the areas addressed and confirm completeness of the cleanup effort.

2.3 SOIL COVER

2.3.1 General

All areas designated to receive placement of the 24-inch thick vegetated soil cover are identified on Plans 1 and 2. The 24-inch thick vegetated soil cover will consist of a 6-inch thick sand layer, 15-inch thick clay layer, and 3-inch thick seeded topsoil layer in accordance with Article V (1)(a) of the Consent Decree. Additional sand cover may be required to configure areas to promote positive drainage. All soil placement will be in accordance with Section 02200 of Attachment B, Specifications, dated June 1988, revised October 1988, prepared by CCJM.

2.3.2 Flat Areas

The easternmost road, East Border Area, Seepage Basin/Ditch, Pumping Lagoon-north area, and area between the Industrial Canal and Borrow Pit will receive a 24-inch thick vegetated soil cover as described in Section 2.3.1.

2.3.3 Sloped Areas Adjacent to Water Bodies

Sloped areas adjacent to water bodies include the west and south banks of the Industrial Canal, all banks of the Pumping Lagoon, and the south bank of the Borrow Pit area adjacent to the Pumping Lagoon-north area. These areas will be remediated with soil and/or a composite riprap/sand cover as described below.

2.3.3.1 Sand Backfill and Grading

Existing sloped areas, as identified above, will be backfilled with sand from the Borrow Pit and graded to a slope lying between 2:1 and 2.5:1 in accordance with the Work Plan Supplement, dated April 28, 1990, prepared by CRA.

2.3.3.2 Riprap Slope Protection

To prevent potential slope erosion at the soil/water interface along each bank as identified in Section 2.3.3, a 6-foot wide, 12-inch thick riprap layer, underlain by geotextile filter fabric will be placed, as detailed on Plan 3 and in accordance with Section 02200 of Attachment B, Specifications, dated June 1988, revised October 1988, prepared by CCJM.

2.3.3.3 Extension of Drain Lines

Several subsurface seepage drain lines, Collection Basin water level control drain lines, and Seepage Basin spillway drain lines were

installed along the south bank of the Industrial Canal during previous remedial construction activities. These drain lines relieve water seepage pressures between the dike and the remedial soil cover, and control the water levels in the Collection Basin and the Seepage Basin, respectively.

Prior to placement of the composite soil/riprap remedial cover along the Industrial Canal, the drain lines noted above shall be extended, as necessary to meet the final grade of the remedial cover. Riprap slope protection shall be placed around the outside of the Settling Basin overflow drain line at the outfall, similar to that along the water/soil interface. Exact placement of riprap shall be determined in the field by Manville's OSR.

2.3.4 Soil Cover Above Riprap

The sloped area between the top of the riprap and existing remediation soil cover or existing gravel roadways will be remediated with placement of a 24-inch thick vegetated soil cover as detailed on Plan 3, and in accordance with Section 02200 of Attachment B, Specifications, dated June 1988, revised October 1988, prepared by CCJM.

Seeding of the soil cover is discussed in Section 2.3.5.

2.3.5 Seeding

Areas receiving a 24-inch thick vegetated soil cover as described in Sections 2.3.1 will be fertilized and seeded in accordance with

Section 02200 of Attachment B, Specifications dated June 1988, revised October 1988, prepared by CCJM.

Seed mixture for flat areas will be Illinois Department of Transportation (IDOT) mixture Class 2 as detailed in Table 2.1. Seed mixture for sloped areas adjacent to water bodies, where maintenance will be difficult, will be as detailed in Table 2.1.

2.4 ROADWAYS

The former Borrow Pit Access road between the Pumping Lagoon and the Industrial Canal and the existing bituminous roadway along the north perimeter of the Pumping Lagoon will be remediated by placement of a 20-foot wide Class I gravel road as detailed on Plan 3.

The Class I gravel road consists of a nominal 12-inch thick sand subbase, 8-inch thick coarse aggregate subbase and 4-inch thick fine aggregate surface. Placement of the gravel roads will be in accordance with Section 02200 of Attachment B, Specifications, dated June 1988, revised October 1988, prepared by CCJM.

All subsurface remedial work tasks specified in this Work Plan, including installation of new concrete storm sewers, will be performed prior to road construction.

TABLE 2.1
SEEDING MIXTURES
WAUKEGAN REMEDIAL SITE
MANVILLE SALES CORPORATION

Type	*Seeds*	*lbs/acre*
Flat Areas (IDOT Class 2)	Ky 31 or Alta Fescue	50
	Perennial Rye Grass	30
	Creeping Red Fescue	20
	Cover Crop (note 1)	
Slopes adjacent to Water Bodies	Crownvetch	15
	Perennial Rye Grass	10
	Alsike Clover	7
	Cover Crop (note 1)	

Note 1 - Cover crop consists of either Spring Oats or Winter Rye at an application rate of 48 lbs/acre or 56 lbs/acre respectively, depending upon when seeding is placed.

2.5 GRAVEL COVER

2.5.1 Area West of South Central Area - West

The area west of the South Control Area - West and Papermill Black Ditch was used as an equipment staging area by Manville's remedial contractor during the original remedial construction work. Subsequent to completion of the original work, the area was brought back to its original condition prior to remedial activities.

Under this Second Work Plan Supplement, a 24-inch thick composite gravel and sand cover shall be placed over the area as shown on Plan 1. The construction of the gravel cover shall be identical to the Class I gravel roadway as described in Section 2.4. Prior to placement of the gravel cover, existing storm catch basins in the area shall be adapted to accept a 24-inch diameter cast iron grating. The gravel cover shall be placed and graded to provide positive drainage to the existing storm drainage structures. All gravel cover placement will be performed in accordance with Section 02200 of Attachment B, Specifications, dated June 1988, revised October 1988 and prepared by CCJM.

2.5.2 Semi-Trailer Staging Area

The Semi-Trailer Staging Area identified on Plan 1 is presently used by the Manville plant for staging of loaded and empty semi-trailers. Under this Second Work Plan Supplement, the staging area will be policed for ACM waste as noted in Section 2.2 and then covered with a

minimum of 12 inches of compacted surface gravel. In addition, existing semi-trailer dolly support pads will be raised, as necessary to accommodate the new grade of the gravel cover. The gravel cover shall be compacted to at least 95 percent standard Proctor density with a moisture content within ± 1 percent of optimum moisture content for the gravel and graded to provide positive storm drainage away from the area. The exact drainage pattern shall be field determined by Manville's OSR and the contractor.

In the event that the existing semi-trailer dolly support pads cannot feasibly be raised to meet the new grade of the area, the existing pads will be removed and disposed of in the Active Miscellaneous Waste Disposal Area. New reinforced concrete pads will be constructed on a prepared gravel base.

2.6 CULVERTS

2.6.1 Abandonment of Existing Lines

Existing asbestos-cement culverts located under the former Borrow Pit access road and in the area between the Borrow Pit and Industrial Canal as identified on Plan 1 will be abandoned by crushing with a backhoe bucket. These culverts will be thoroughly wetted with water prior to crushing to eliminate the potential for visible emissions. Void space remaining following crushing of the culverts will be backfilled with sand.

2.6.2 Installation of New Culverts

To maintain compatible Industrial Canal, Borrow Pit, and Pumping Lagoon water levels, new 36-inch diameter concrete culverts with flared ends will be installed between the Industrial Canal and Pumping Lagoon and between the Industrial Canal and Borrow Pit as shown on Plan 1. All culvert installation will be performed in accordance with Section 02500 of Attachment B, Specifications, dated June 1988, revised October 1988, prepared by CCJM. Layout and elevations of the culvert inverts will be established in the field by Manville's OSR prior to installation.

Material excavated during culvert installation will be thoroughly prewetted with water and will be placed on adjacent areas requiring soil cover prior to soil cover placement.

2.7 MISCELLANEOUS TASKS

2.7.1 Backfill of Existing Ditches

Water levels between the Borrow Pit and Industrial Canal are presently maintained through a series of culverts and ditches. To ensure that water level control is maintained between the former and present borrow pit areas, a 15 to 20 foot wide by approximately 15 foot deep channel between the two water bodies shall be created during reclamation of sand cover. The exact location of the channel shall be field determined by Manville's OSR and approved by USEPA's OSC.

The existing culverts between the Borrow Pit and the Industrial Canal will be abandoned as discussed in Section 2.6.1. The ditches will be backfilled with sand and the area remediated with a 24-inch thick vegetated soil cover as described in Section 2.3.1. Water levels will be maintained through installation of a 36-inch diameter concrete culvert as detailed on Plan 1 and as discussed in Section 2.6.2. Backfill of the ditches with sand will be performed in accordance with Section 02200 of Attachment B, Specifications, dated June 1988, revised October 1988, prepared by CCJM.

2.7.2 Extension of Monitoring Wells

Eight on-Site monitoring wells located in the East Border area (MWY, MW5, MW6, MW7, MW8, MW9, MW10 and MW11) will be extended to accommodate the grade of the new soil cover. Included in this work task is the extension of the monitoring well casing, cover and surrounding steel/concrete protective posts. All work under this activity will be performed prior to soil cover placement in the vicinity of the monitoring wells. At all times, the remedial contractor shall take every precaution to prevent contamination of the monitoring wells.

Extension of MW-Y will consist of removing the existing steel outer protective casing, extending the inner PVC well casing, and placement of a new outer casing as shown on Plan 3. To remove the outer steel casing, the contractor shall manually excavate around the base of the casing to expose and separate the cement anchor from the steel casing. Any ACM waste material encountered shall be removed from the area and placed

in an area scheduled to be covered with the remedial soil cover as designated by Manville's OSR and approved by USEPA's OSC. The inner PVC casing shall be extended with a PVC riser pipe of at least 24 inches in length. The exact length will be field determined by Manville's OSR. Prior to attaching the extension to the well, the pipe shall be steam cleaned. It is anticipated that the well casing for MW-Y is threaded and will accept a threaded riser. In the event that no threads exist on MW-Y, the extension pipe shall be coupled to the well casing using PVC solvent weld techniques. The connection will be above the static water level and the monitoring well solely used for water level measurements only. All solvent welding, if necessary, shall be performed on the outside of the well casing and/or away from the well.

Extension of the remaining seven monitoring wells (MW-5, MW-6, MW-7, MW-8, MW-9, MW-10 and MW-11) will consist of removing the outer steel protective casing cap, attaching a threaded stainless-steel riser section of at least 24-inches in length by threading to existing threads on each well casing, and welding a new section of pipe to the protective steel casing as shown on Plan 3. The exact length of each extension shall be field determined by Manville's OSR and the remedial contractor. The dedicated bailers at each well location shall be protected from contamination by wrapping each one in a new piece of aluminum foil while attaching the new riser section. Each riser pipe section shall be steamed cleaned prior to installation. Subsequent to threading of the riser section to the well casing, the aluminum foil shall be removed from the well cap and bailer and the well cap and bailer returned to the monitoring well.

The outer steel casings for each well shall be extended by welding a section of steel pipe to the existing outer steel casing. The space between the inner and outer casing will be grouted to at least 18 inches below the new elevation of the monitoring wells for both the PVC and stainless steel wells. A new outer casing shall be installed as necessary where existing outer casings are non reusable.

Where protective posts presently exist around the monitoring wells, the protective posts shall be raised by welding an extension pipe to the protective post and filling the post to the top with concrete. The top of each post shall be set at least four feet above the new grade of the remedial soil cover. Protective post extensions shall be painted following completion of the extension in high visibility yellow paint.

Upon completion of the soil cover placement adjacent to the monitoring wells, a 3-inch thick surface gravel cover shall be placed around each monitoring well location in place of the topsoil and seeding as shown on Plan 3 to reduce vegetation over growth adjacent to the wells.

2.7.3 West Parking Area

The West Parking Area will be used for staging materials and equipment during the implementation of this Second Work Plan Supplement. Subsequent to completion of remedial soil cover activities and prior to demobilization, the parking area shall be cleaned by mechanical or manual methods and all debris generated disposed of in the Active Miscellaneous Waste Disposal Area.

Manville's OSR and USEPA's OSC shall then examine the parking area and identify any substantial cracks and/or potholes to be repaired. The contractor shall remove debris from the cracks and potholes identified and fill them with bituminous cold patch mix and compact to grade. Small cracks shall be filed with hot tar sealant, as necessary. Following completion of the above activity, future maintenance of the West Parking Area shall be performed by Manville in accordance with the Site Operations and Maintenance Program.

2.7.4 Placement of Vehicular Barriers

Subsequent to completion of the soil cover east of the East Ditch area, the former East Road shall be blocked from vehicular access from the south and north gravel roadways as shown on Plan 2. Prefabricated concrete road barriers shall be placed at five foot centers similar to those used at the base of the Settling Basin south slope during original remedial construction activities, for this purpose. It is anticipated that approximately 12 barriers (six at each location) will be required for this activity. Exact number of blocks and spacing between each block will be field determined by Manville's OSR and USEPA's OSC.

3.0 HEALTH AND SAFETY

During the implementation of activities involving potential contact with ACM under this Work Plan, the guidelines of Attachment G, Health and Safety Plan, dated June 1988, revised October 1988, prepared by CCJM will be followed.

The remedial contractor will be responsible for furnishing all equipment, supplies and analytical analyses required under the Health and Safety Plan.

Personnel air monitoring will be conducted by the contractor while performing work involving potential contact with ACM. All analytical data collected will be submitted to Manville's OSR and maintained in the on-Site files.

A majority of the work under this Work Plan will involve working adjacent to previously remediated areas on-Site. Manville shall, therefore, minimize the potential for contamination of the previously remediated areas, including, but not limited to, re-evaluating the flow of work related traffic in and around the Site.

Areas previously remediated which are disturbed or which become contaminated during execution of this supplemental work program will be restored to a condition consistent with the requirements of this Second Work Plan Supplement. Every effort shall be made to prevent recontamination of previously remediated areas.

4.0 SCHEDULE

All remedial construction described in this Second Work Plan Supplement shall be completed within 150 calendar days from USEPA's written approval. Following this date, long-term maintenance and monitoring of areas addressed in this Second Work Plan Supplement shall commence. Cutting of the vegetative cover, as part of the maintenance program, shall be performed in accordance with the Operations and Maintenance Manual for the Site. Three cuttings of the vegetative cover in areas addressed in this Second Work Plan Supplement, in accordance with Section 02200 Part 3M of Attachment B to the original Work Plan, shall be completed prior to the issuance, by USEPA, of a Certificate of Completion.

Following commencement of the work, the contractor will provide an initial project work schedule and subsequent updated work schedules in accordance with Section 2.3 of Attachment B, Specifications, dated June 1988, revised October 1988, prepared by CCJM.

SUPPLEMENTAL WORK PLAN DRAWINGS (2)

MAY BE VIEWED AT:

U.S. EPA RECORDS CENTER
77 WEST JACKSON BLVD.
CHICAGO, IL 60604-3590